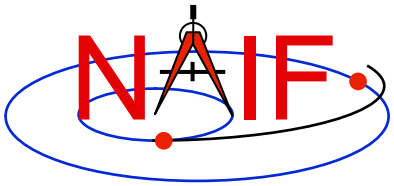
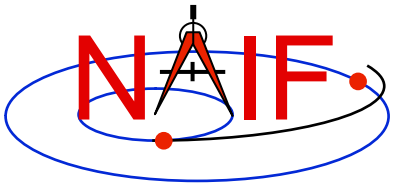


Navigation and Ancillary Information Facility

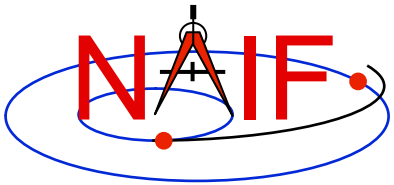
SPICE Development Plans and Possibilities

March 2010



Outline

- Work in progress
- Future possibilities
- Your suggestions?



Work In Progress

- **Extension of the shape model subsystem**
  - **The task is to add two new shape model capabilities:**
    - » **plate model, for small, irregularly shaped bodies, and**
    - » **digital elevation model**

    to the existing tri-axial shape model found in PCK
  - **Status**
    - » **A prototype of the plate model has been given to several projects**
    - » **Work was on hold for quite some time due to JNISpice task**
    - » **Work has now resumed, but there is a long way to go**
    - » **The prototype plate model interfaces will change somewhat**
    - » **Dates for release of “alpha-test” and “final” versions are unknown**

New Language Interfaces

- **Java Native Interface (JNISpice)**
  - An alpha-test release was made in February, 2010
  - Official addition to the Toolkit later this year (date is TBD)

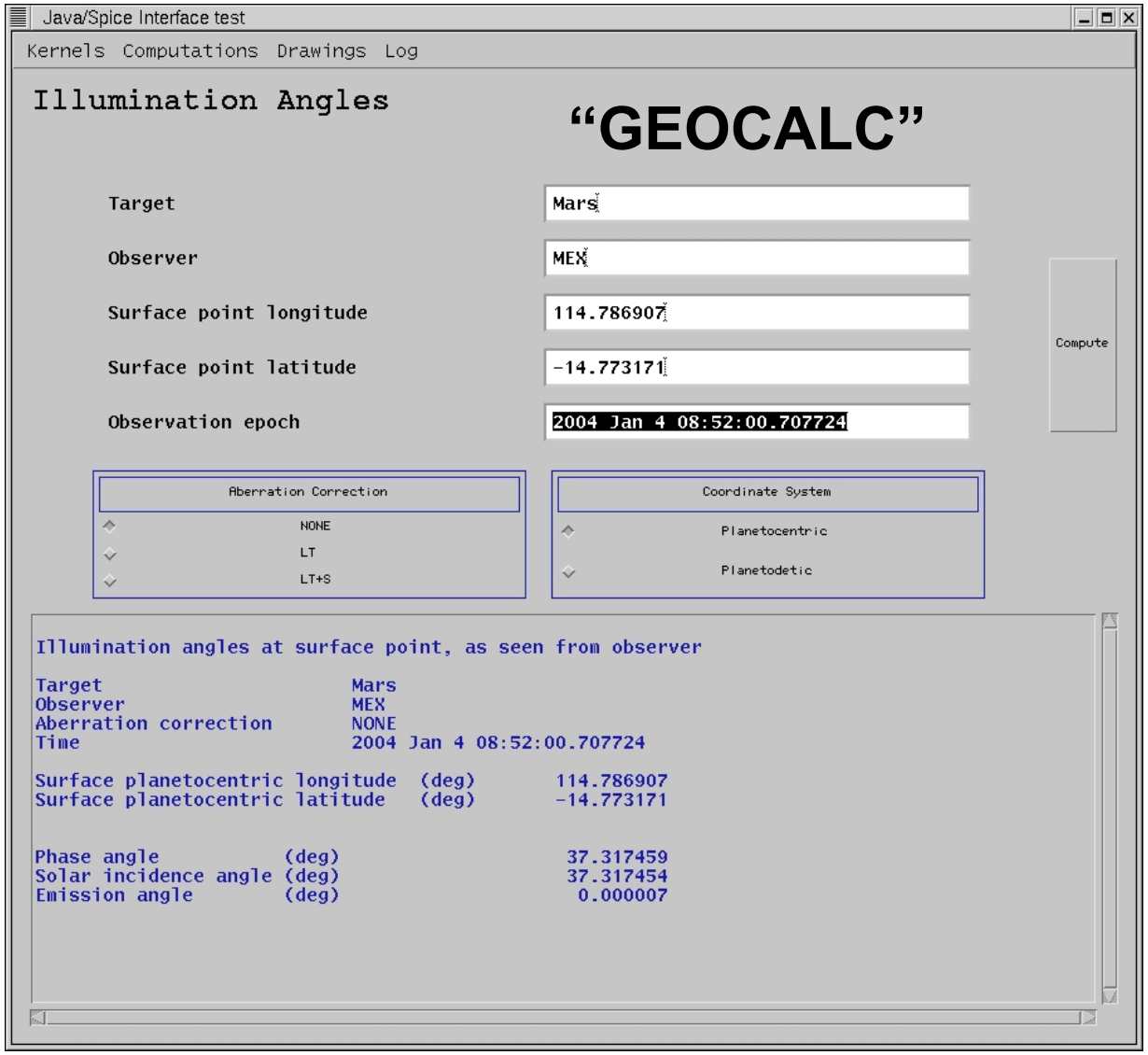
- **Python**
  - Considerable prototyping has been done
  - Whether or not this effort will proceed, and when, is uncertain

Other Possibilities - 1

- Provide a GUI tool that will contrast a set of SPK files, thus aiding you in selecting the one(s) of interest
- Provide a GUI tool for easier creation of a SPICE frame, and visualization thereof
- Provide a “predict spk” tool that makes it easy to construct an SPK file from simple rules
- Add more high-level computations, such as instrument footprint coverage
- Star catalog integrated with SPICE capabilities

Other Possibilities - 2

Navigation and Ancillary Information Facility

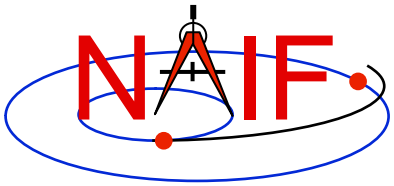


Provide a GUI interface to a limited set of SPICE computations.

In this example, compute the illumination angles on Mars at LON 114.7 and LAT -14.7 as seen from Mars Express on 2004 JAN 4 08:52:00. The user can pick either a planetocentric or planetodetic reference frame.

Still Other Possibilities?

- Additional target models: rings, gravity, atmosphere, magnetosphere, …
- Develop a more flexible and extensible instrument modeling mechanism



What do You Suggest?

- **NAIF solicits suggestions from the user community.**
  - **Caution: we're a small team and have a large backlog, so we can't promise any particular action.**
- **We're interested in programmatic ideas as well as technical ones.**
  - **Should NAIF promote use of SPICE beyond NASA's planetary science program?**
  - **What amount of cooperation and interoperability with foreign partners is appropriate and achievable?**